

tion, even twenty years ago, was fitly indicated by his selection, in April, 1882, to attend Darwin's funeral in Westminster Abbey as the representative of the Liverpool scientific societies. On the occasion of the last visit of the British Association to Liverpool, in 1896, Thompson was one of the local secretaries, and his colleagues can testify how well he did his share of the hard work, and how much the success of that large meeting depended upon his admirable business arrangements and careful attention to detail. He was a fellow of the Linnean Society and a regular and active member of Section D at British Association meetings. He was one of the founders of the Liverpool Biological Society and the L.M.B.C., and it was in connection with the latter, and during the last fifteen years, that most of his original scientific work was done.

Isaac Thompson was a good example of the serious amateur who does sound systematic work and makes lasting contributions to science. His loss will be keenly felt, not only in Liverpool, but by the large number of scientific men throughout the country who were his personal friends. We all admired his sterling, upright character and his sympathetic loving nature.

W. A. H.

NOTES.

PROF. J. H. VAN 'T HOFF and Dr. Robert Koch have been elected honorary members of the Vienna Academy of Sciences. Sir William Ramsay, Prof. G. B. von Neumayer, Prof. H. Poincaré, Prof. E. J. Marey, and Prof. K. Golgi have been elected foreign correspondents of the same Academy.

THE death is announced of Prof. Robert H. Thurston, of Cornell University, at the age of sixty-four. From 1866 to 1871 Prof. Thurston occupied the chair of natural philosophy at the United States Naval Academy. Subsequently he became professor of engineering at Stevens Institute, where he remained until he proceeded to Cornell, in 1885, as professor of mechanical technology.

DR. EINAR LÖNNBERG has been appointed director of the zoological department of the Museum of Gothenburg.

REUTER reports that two earthquake shocks were felt at Shiraz, Persia, on the night of November 14.

MR. W. J. PALMER, a graduate of the Ontario Agricultural College, has been appointed director of agriculture in the Orange River Colony at a salary of 1200*l.* per annum.

THE sixth International Congress of Applied Chemistry is to be held at Rome in 1906. Prof. E. Paterno, of Rome, has been elected president of the organising committee.

It is stated by *La Nature* that the body of a Tyrolese guide who fell into a crevasse on the glacier of Gross-venediger, in the Austrian Alps, thirty years ago, has been found in a remarkable state of preservation at the foot of the glacier.

A MONUMENT to the brothers Häüy was unveiled at their birthplace, Saint-Just-en-Chaussée (Oise), on November 8. The elder brother, René Just Häüy, who died in 1822, was the eminent mineralogist. The ceremony was presided over by M. Edmond Perrier.

At a meeting of the Royal Statistical Society held on Tuesday, the president, Major P. G. Craigie, C.B., delivered his opening address. Before doing so he presented, on behalf of the council and the society, a Guy medal in silver to M. Yves Guyot, for his paper on "The Sugar

Industry of the Continent," which was read before the society on May 29, 1902.

THE Craggs research prize, for the best piece of original work done during the current year by present or past students of the London School of Tropical Medicine, has been awarded to Dr. Aldo Castellani for his researches into the etiology of sleeping sickness. Dr. Travers has been awarded honourable mention for his paper "Beri-Beri."

COMMANDER PEARY WAS, on November 12, in Edinburgh, presented with the Royal Scottish Geographical Society's Livingstone gold medal. Previous awards of the medal were to Sir Harry Johnston for discoveries in Africa, and to Dr. Sven Hedin for exploration in the central region of the Ural-Asian continent.

MR. M. H. MAW, of Walk House, Barrow-on-Humber, states that the radiant point of meteors seen by him in the early hours of Monday seemed to be about ten degrees south of the zenith. Meteors under the Pole Star seemed to move vertically down through 30° in about half a second. Taking the altitude of such a meteor to be eighty miles, the length of the arc described in half a second would be forty-two miles if the motion were at right angles to the line of sight.

A REUTER telegram from Rome reports that experiments made by the Italian naval authorities with a new system of radio-telegraphy originated by Prof. Alessandro Artom have conclusively proved that the new system enables electric waves to be transmitted in a given direction. The Minister of Marine has instructed Lieutenant Pullino, director of the wireless telegraph station of Monte Mario (Rome), to give every assistance in further experiments with the Artom system.

THE *Times* reports that the expedition to Tibet, under Captain Rawling and Lieutenant Hargreaves, of the Somerset Light Infantry, which left Leh in Ladak last May, arrived in Kashmir territory on October 4. Triangulation was extended as far as longitude 85° E., the highest latitude being 35° 45', and lowest 32° 45'. Many new lakes were discovered, the largest having an area of 70 square miles. One hundred points were fixed by triangulation, and latitudes of all the camps by astronomical observations; 38,000 square miles of country were surveyed.

THE following prizes have been awarded by the council of the Royal Society of Edinburgh:—(1) the Keith prize for 1899–1901 to Dr. Hugh Marshall for his discovery of the persulphates, and for his communications on the properties and reactions of these salts, published in the *Proceedings* of the Society; (2) the Makdougall-Brisbane prize for 1900–1902 to Dr. Arthur T. Masterman for his paper entitled "The Early Development of *Cribrella oculata* (Forbes), with remarks on Echinoderm Development," printed in vol. xl. of the *Transactions* of the Society. The prizes will be presented at the meeting of the Society on December 7.

A CORRESPONDENT of the *Times* reports that on November 12 a balloon belonging to MM. Lebaudy, and called *Le Jaune*, started from Moisson, about 55 kilometres from Paris, at 9.10 a.m., arrived at the Eiffel Tower at 10.50 a.m., and effected its descent on the Champ de Mars. According to M. Juchmès, an aéronaut and one of two passengers, the balloon encountered at first a south-south-west wind travelling at the rate of six metres a second. Almost the whole way he had to keep the point of the balloon somewhat to the right of the direction he intended to take. The maximum altitude attained was 300 metres, but the average was about 100.

ANNOUNCEMENT is made of the proposed publication of a new journal under the title *Archivio di Fisiologia*, edited by Prof. Giulio Fano, director of the physiological laboratory at Florence. The journal will be especially concerned with experimental work, but synthetic reviews and philosophical disquisitions will not be excluded from it. Contributions will be published, according to the wish of the author, in English, Italian, German or French. The *Archivio di Fisiologia* will appear every two months, forming a yearly volume of about 500 pages. The English agents are Messrs. W. Heffer and Sons, Cambridge.

Mr. E. KITTO, superintendent of the Falmouth Observatory, sends some particulars of the recent magnetic storm registered at that observatory. Commencing on October 31 at 7 a.m., the disturbance continued until 5 a.m. on November 1. It was severe from 7 a.m. to 7 p.m. on October 31, but the period of exceptional severity was between 1 p.m. and 7 p.m., during which time the declination magnet swung through an arc of 2 degrees 2 minutes, as determined by actual measurements of the declination curve. The Falmouth Observatory magnetic records are continuous from January, 1887, but the magnetic storm of October 31 stands out as the most remarkable record of magnetic disturbance ever made at the observatory.

It is reported by the *Pioneer Mail* that the Secretary of State for India has definitely sanctioned the scheme for establishing an agricultural college at Pusa, in the Muzaffarpur district. The intention is to combine a large experimental farm and an agricultural college with an institution for research, so as to form a great Imperial institution. The fine Government estate at Pusa will be the headquarters of the staff of various experts, including an agricultural chemist, who will be mainly an analyst and cryptogamic botanist, whose business it is to investigate the diseases which attack the principal indigenous crops, and an entomologist, charged with the study of insect pests. A cattle farm for the improvement of the local breed of cattle will also be included.

A LECTURESHIP has been endowed in the University of Birmingham by an anonymous friend in memory of the late Prof. Huxley. We learn from the *British Medical Journal* that the lecture is to be given annually, either in the winter or spring terms, and to be open to all members of the university without payment. It is to be called the Huxley lecture, and for its endowment a sum of 20l. per annum has been given. The lecture will also commemorate the opening of Mason's College, the predecessor of the university, by Prof. Huxley. As the donor has expressed a wish that the first lecture should be given by someone who knew the late Prof. Huxley intimately, and who was associated with his work, it has been decided by the council on the recommendation of the Senate to invite Sir Michael Foster, K.C.B., F.R.S., to deliver the first lecture.

ON the completion of the portrait of the late Prof. P. G. Tait for the Hall of Peterhouse, Cambridge, the treasurer was able to announce a surplus in hand. It was therefore suggested that an attempt should be made to increase this amount until it should suffice for the establishment in the college of a prize associated with Prof. Tait's name, and to be given for excellence in his subject, physics. Mention was made of this project in our issue of October 22 (p. 603); and we now learn that a final report made to the master and fellows of Peterhouse on October 29 showed that the amount of the fund had reached the substantial total of 200l. A committee was appointed to draw up regulations for the award of the prize, and record was made of the

gratitude of the college to all who have united in establishing this worthy memorial of a renowned *alumnus* of Peterhouse.

Mr. R. KAYE GRAY, in his presidential address to the Institution of Electrical Engineers last Thursday, dealt with a number of subjects of importance and interest. He referred at some length to the development of electric traction and power-supply in this country, and laid considerable stress on the difficulties caused by faulty legislation, which had hampered the progress of these branches, and, indeed, to a certain extent, of all electrical engineering in England. All engineers will join in his hope that the Government will speedily carry out the promises made to the deputation headed by Mr. Swinburne last year, and will both introduce and carry through really effective amending measures. Mr. Gray referred to the fact that the Institution had recently purchased a site for building a permanent home for itself, and said that there was no intention of building as yet, partly because it was possible that in the near future the various engineering interests might unite to build "one large temple of engineering," in which all might find a home.

FOR several years past valuable statistics of rainfall and other meteorological phenomena recorded at Zomba, in British Central Africa, have been published by the scientific department of that protectorate; the head of that department is Mr. J. McClounie. We are somewhat surprised to find that, as the head of a public department, he has ventured to depart from the orthodox scientific methods adopted by official meteorologists, and has issued daily rainfall forecasts from June 1903 to May 1904, and estimated monthly amounts for various parts of Nyasaland. He states that "the forecasts have been framed according to the relative positions of the moon and the sun on the dates noted, and the estimates formed according to the various movements of the moon, and proportionate to our knowledge of the average rainfall of each month as regulated by latitude and altitude." Prof. Pernter, in the paper referred to in our issue of last week, has pointed out, as, indeed, Herschel stated many years ago, that the influence of the moon on weather is so small as to be almost inappreciable. We are not prepared, without further inquiry, to endorse Prof. Pernter's opinion that the adherents of the lunar theory carefully note the days on which their forecasts have been successful, but take no heed of the failures; we are, however, not yet prepared to admit that this method of forecasting weather is likely to lead to any useful results.

SOME further particulars with regard to the alleged discovery of the cancer parasite by Dr. Schmidt (see *NATURE*, November 12, p. 34) are published in the *Lancet*. These are given by Mr. H. J. Johnson in a paper read before the Abernethian Society at St. Bartholomew's Hospital. Dr. Schmidt claims not only to have isolated the parasite, but to have cultivated it, though no details are given. By the use of killed cultures a vaccine is prepared, the injection of which into a patient with cancer is stated to be followed by a reaction and by curative effects. By injecting animals with the cultures, their serum acquires antidotal properties, and may also be used for treatment. At present there is no supply either of the vaccine or serum available for treatment.

IN a recent number of *NATURE* (vol. lxxviii. p. 8) a brief summary was given of the position of the present epoch in relation to Brückner's long weather cycle of 35 years, and it was there shown that as regards the total rainfall of the British Isles we have now passed a minimum or "droughty period," and are commencing a wet cycle, which will reach

a maximum about the year 1913. Mr. Douglas Archibald, in a letter to the *Times* for November 16, gives some figures which represent the variation of the rainfall over the London area from the year 1813, using Greenwich and Mr. Dines's observations. Arranging these 90 years in groups as suggested previously by Brückner, he gives an interesting table showing not only the excess or defect of rain, but also the excess or defect of atmospheric pressure and the variations of the price of wheat since 1856.

Group of years assigned by Brückner	Character of the Period	Total excess or defect of rainfall in the period	Total excess or defect of barometric pressure, Greenwich	Mean annual fluctuations of yield of wheat from the true average over the United Kingdom
1806-25	Wet	Inches + 15.54 ¹	Inches - 0.065 ¹	Bushels
1826-40	Dry	- 6.17	+ 0.165	
1841-55	Wet	+ 4.35	- 0.045	
1856-70	Dry	- 11.85	+ 0.150	+ 1.7
1871-85	Wet	+ 19.65	- 0.120	- 2.0
1886-1902	Dry	- 29.75	+ 0.272	+ 2.2
1903-1920(?)	Wet	—	—	—

¹ 1813 to 1825 for both.

Mr. Archibald concludes his letter by saying that "we are apparently entering upon a period of more than average rainfall, less than average barometric pressure, and about two bushels less than the average wheat yield per acre."

MESSRS. W. J. McNEAL AND F. G. NOVY report that they have succeeded in cultivating the trypanosome parasite of the rat, *T. Lewisi*, in a mixture of sterile defibrinated rabbit's blood and ordinary nutrient agar. Ordinary nutrient agar is prepared, sterilised, and allowed to cool to 50° C. One-third of its volume of defibrinated rabbit's blood, obtained with aseptic precautions, is then added, and the test-tubes containing the mixture are allowed to solidify in the oblique position. Loopfuls of rat's blood containing the parasite are then sown into the condensation water at the bottom of the tubes. In this the trypanosomes readily develop at 34-37° C. During a year eleven passages were made from tube to tube, and a small quantity of the culture from the tenth tube readily infected a rat inoculated with it (ref. in *Bull. de l'Inst. Pasteur*, i., No. 16, p. 602).

THE current number of the *Journal of the Sanitary Institute* (October) is mainly devoted to the papers read at the congress at Bradford and the discussions thereon. Several papers deal with the question of sewage disposal and with the bacterial systems of sewage disposal, the standardising of sewage being the subject of a joint discussion in the engineering and biological sections. The "Standardisation of Disinfectants" is the title of a paper by Messrs. Rideal and Ainslie Walker, and it is proposed to test all disinfectants under the same conditions of time, &c., and to compare the results with those obtained with carbolic acid solution. Thus if a 1 in 70 solution of disinfectant X possessed the same disinfecting action as a 1 in 80 solution of carbolic acid, the efficiency of disinfectant X compared with carbolic acid would be $70/80 = 0.87$. This is termed the carbolic acid coefficient.

A REPORT has been issued by Prof. K. R. Koch dealing with the gravitational measurements conducted under the auspices of the Württemberg Geodetical Commission at ten stations on the line from Ulm to Freudenstadt. In these experiments a new pendulum made of Delta metal has been used with satisfactory results.

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IN a short paper reprinted from the *Rivista di Fisica* (Pavia), Ingegnere G. Zanotti Bianco deals with the history of determinations of the earth's mean density, with especial reference to the investigations of several Italian writers whose work has received but little attention, at any rate in this country. Among them are C. I. Giulio, Menabrea, and Saigey.

MR. A. CANCELI has published a paper reprinted from the *Atti dell' Accademia Gioenia* (Catania) dealing with the relation between the temperatures of springs and those of the air. A noteworthy feature of this paper is the bibliography of the subject. The principal previous bibliography was published by the Weather Bureau at Washington in 1899, and as only a limited number of copies were lithographed, it is probable that the present enlarged list will be of much use for purposes of reference.

THE problem of correlation in hyperspaces forms the subject of an important paper by Mr. Giovanni Zeno Giambelli in the *Memorie* of the Lombardy Institution of Sciences and Letters. The author refers to the work of Hirst, Sturm, Visalli and others on correlation in plane and ordinary spaces. In regard to correlation in hyperspaces, the fundamental formulæ were published without proof by Schubert in 1890, and again in 1894-5. Mr. Giambelli now gives proofs of Schubert's formulæ, and obtains others of a more general character. The results are obtained by the method of "degeneration" introduced by Schubert in dealing with ordinary space and with quadrics in hyperspaces.

PAPERS by Messrs. Epstein and Shaw in the last two numbers of the *Transactions* of the American Mathematical Society deal with the interesting subject of linear algebras, and bear witness to the value and originality of Peirce's researches. Another noticeable paper, in the July number, is that of Van Vleck on continued functions, on the lines of Stieltjes's memoir of 1894. The October number of the *Annals of Mathematics* contains the first part of a paper by Prof. Greenhill on the mathematical theory of the top, and a contribution by Mr. E. B. Wilson which deals with a generalised definition of area which does not involve the conception of length.

THE September issue of *Annotaciones Zoologicae Japonenses* deals solely with Japanese invertebrates. Mr. E. Klocke records the occurrence of the crustacean genus *Bosminopsis* in Japan; Mr. A. Izuka describes a new polygordian worm; while Mr. E. Ikeda treats of the development of the sexual organs in the phoronis larva.

IN the *Morphologisches Jahrbuch* (vol. xxxi., part iv.), Dr. H. Fleischmann's essay on the morphology of the head-skeleton of the Amniota is continued, Dr. A. Beecker contributing a section on the nasal region in reptiles, birds, and mammals. Mr. G. Tornier describes numerous instances of the development of supernumerary digits in the forefeet of members of the deer-tribe, due, in most cases at any rate, to injury during foetal life. None of these appear to be atavistic.

A REPRINT from the *Cape Times* of the report of the recent annual meeting of the Game and Trout Protection Association of the western districts of South Africa affords very satisfactory reading. The laws for the protection of big game are apparently working well, certain attempts to curtail the close season having been vetoed by the Government. In some districts it has been found advisable to have a special close season for certain kinds of game, and to include therein a few species of birds which do not properly come under that category. A large tract of country in the

Bushmanland division of Namaqualand has been created a game reserve, in which it is unlawful to kill, hunt, or trap any description of game animal. Despite the Boer war, certain species of antelope, which have long been on the verge of extermination, still survive. Blesbok, for instance, are stated to be represented by about 650 head in the Steynsburg division, and bontebok by some 250 in Bredasdorp and 25 in Swellendam. Reedbuck include about 200 head in Komgha, where they are specially protected, and 50 in Kimberley. Nothing is, however, said with regard to the white-tailed gnu, which has been reported extinct, the "wildbeest" referred to being apparently the brindled gnu. Of zebra about 340 individuals survive, mostly in Cradock, George, Oudtshoorn, and Uniondale.

WE have on our table two parts (vol. lxxv., i. and ii.) of the *Zeitschrift für wissenschaftliche Zoologie*, from among the contents of which a few articles are selected for brief mention. In the first part the light-organs of the glow-worm receive attention at the hands of Mr. J. Bongardt, while Mr. Haack treats of the glands in the mouth of the lampreys. In the second part Dr. E. Rohde continues the account of his important investigations into the structure of the organic cell, discussing, in this instance, the structure and mode of division of the wandering bodies known as "sphaeres" and "centrosomes" which are found moving free in many cells and their nuclei. The gill-filters of fresh-water fishes form the subject of an article by Dr. E. Zander. It is shown that while carnivorous types like the pike have the inner sides of the gill-arches, the bones of the branchio-palatal apparatus, and the pharyngeals studded with minute villiform teeth, in forms like the perch, carps, and herrings there is a strongly developed sieve-like appendage ("Siebfortsätze") on both branches of the gill-arches. The fineness of this filtering arrangement is correlated with the habitat and food of the groups in which it occurs, attaining its extreme development in this respect in those subsisting on "plankton."

To the *Proceedings* of the American Academy of Arts and Sciences a list of new flowering plants obtained from Mexico and Central America is contributed by Miss J. Greenman. Most of the species belong to the Sympetalæ, so that they do not overlap with those recorded by Dr. J. N. Rose, which would be mainly included in the Archichlamydeæ.

A COMPARISON of the characters of the European and Australian Alpine floras is made by Mr. Weinsdorfer in the *Victorian Naturalist*. Flowers in the Australian Alps display less brilliancy of colour and are not so strongly scented, both of which facts may be correlated with the paucity of insects, but a longer vegetative period and a lower summer mean temperature must also tend to diminish the marked characters which are developed at high altitudes.

THE report of the Meteorological Service of Canada for the year ending December 31, 1901, by Mr. R. F. Stupart, the director of the department, has been received from Ottawa. The volume runs to 370 foolscap pages of meteorological statistics.

MESSRS. CROSBY LOCKWOOD AND SON have published a second edition of Mr. Tyson Sewell's "Elements of Electrical Engineering," which was reviewed in our issue for November 20, 1902. The second edition has been revised, and three chapters dealing with alternating currents have been added.

A COPY of the seventh volume of the *Transactions* of the Rochdale Literary and Scientific Society has been received. It contains an account of the proceedings of the Society for

the years 1900-1903, as well as a number of the papers read before the association during these sessions. The Society is to be congratulated upon its flourishing condition, both as regards its activity and finances. The *Transactions* are published by Mr. James Clegg, of Rochdale, at 2s. 6d.

IN the review of Prof. Henrici's "Vectors and Rotors" in *NATURE* of October 29 (p. 617), it was mentioned that Prof. A. Lodge had suggested the use of the word "locor" to indicate a vector which has definite position, but does not indicate rotation or any rotative function. Prof. R. H. Smith writes to say that the word "locor" is used in this way throughout his book "Graphics," published by Messrs. Longmans in 1888, "rotor" being used for rotative quantities.

PARTS 9 and 10 of the first volume of the *Bulletin* of the Department of Agriculture in Jamaica are devoted to the consideration of the best means of improving the breed of horses in the island.

WE have just received the report for 1902-3 of the work done in the Government Laboratory at Trinidad under the direction of Prof. Carmody. The results of a large number of seedling cane experiments, showing the relative sucrose value of different canes, form a special feature of the report.

A REMARKABLY graphic map of the British Empire, devised by Mr. Stephen Smith, is published in the October number of the *Geographical Teacher*. This map shows the British lands each in proportion to its area, and in such a position that the direction and distance from London are approximately correct. Somewhat similar results are obtained by drawing a hemisphere on an equal area projection with London in the centre, if Australasia is tacked on. Other ways of securing equivalence of area are the Mollweide and the Sanson-Flamsteed projections, where the world is shown within an oval framework. Such an oval map of the British Empire has lately been published by Messrs. Darbishire and Stanford, Ltd., Oxford.

THE question of space interference, a phenomenon first observed by V. Meyer in the case of ortho-substituted aromatic acids which can only be esterified with great difficulty, and in some cases not at all, is discussed by Prof. Skraup in connection with the cinchonine alkaloids. This interesting paper, which indicates that the alkaloids cinchonine, α -i-cinchonine, β -i-cinchonine, and allo-cinchonine have probably no fundamentally different chemical structure, but the reactions of which differ in certain respects by reason of space interference, appears in vol. xlii. of the *Sitzungsberichte der Wiener Akademie*.

IN the current number of the *Zeitschrift für physikalische Chemie*, Prof. van 't Hoff gives an account of the investigations which have been going on for some years in his laboratory relative to the transformations of gypsum. It is shown that gypsum $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ changes at 107°C . into the so-called half-hydrate $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$. At this temperature, however, these two bodies are only meta-stable, for at 93° gypsum changes into the soluble form of anhydrite CaSO_4 , which itself is in reality not stable, for under favourable conditions gypsum actually breaks up at $63^\circ.5$, and forms insoluble anhydrite found in nature and identical with dead-burnt gypsum. The laboratory investigation of these changes is rendered extremely difficult by the occurrence of retardation phenomena analogous to supercooling and supersaturation.

A RECENT number of the *Electro-Chemist and Metallurgist* contains an able article by Mr. W. C. D. Whetham on the present position of the theory of electrolysis. The investigations which led up to the theory of electrolytic dissociation and the modern convective views of electrolysis are traced, and it is clearly shown that a vast number of important observations are easily explained by the modern views. As the author points out, experiments on the comparison of the electrical and the osmotic values of ionisation are of little use from the point of view of the controversialist seeking arguments for or against the ionic dissociation theory. The deviations between the two values are, however, in most cases easily explainable by a consideration of the interionic forces, which probably exert an effect even at dilutions at which the intermolecular forces are negligible, and, further, of the complex ions which are so often formed in solution.

THE additions to the Zoological Society's Gardens during the past week include a Red-fronted Gazelle (*Gazella rufifrons*) from Senegal, presented by Lieut. F. P. Crozier; two Common Mynahs (*Acridotheres tristis*) from India, presented by Mr. H. Munt; a Hawk-billed Turtle (*Chelone imbricata*) from tropical seas, a Testaceous Snake (*Zamenis flagelliformis*) from South United States, deposited.

OUR ASTRONOMICAL COLUMN.

BRIGHT METEORS.—An exceedingly bright meteor was observed by Mr. W. Moss at South Kensington at about 11.15 p.m. on Saturday. Although not looking in the direction of its path, Mr. Moss's attention was directed to the meteor by its remarkable brightness, which he estimated as exceeding that of Jupiter. The part of the path that he observed was about 5° long, and commenced at a point near to the equator, and about 8° E. of δ Orionis. The same object was independently observed by Mr. Mills, who describes it as the brightest he has yet seen, and states that it first appeared about 5° due east of γ Orionis, and, travelling in a south-easterly direction, appeared to burst when approximately 8° or 10° to the N.E. of Rigel.

Several meteors, six of which were probably Leonids, were observed by Mr. W. E. Rolston at South Kensington during an intermittent watch which lasted from 10 p.m. on Saturday until 4.30 a.m. on Sunday. The brightest of the six was one which appeared at about 3.15 on Sunday morning in R.A. 7h. 10m. Dec. $+6^\circ$, and disappeared at R.A. 6h. 30m., Dec. $+5^\circ$, leaving behind it a green broken trail which lasted for about two seconds. The same observer also saw more than 50 Leonids during a watch from 2.15 to 3.45 on Monday morning. These meteors presented the characteristics of the November shower inasmuch as they were exceedingly swift and left broken trails of a reddish hue.

Mr. A. M. Davies, writing from Amersham, Bucks, states that about 10.45 p.m. on November 14 he saw a brilliant meteor with a train move westwards in an almost horizontal path at about the altitude of η Ursæ Majoris.

SEARCH-EPHEMERIS FOR FAYE'S COMET.—Herr E. Ström-gren publishes a further portion of his ephemeris for Faye's comet in No. 3913 of the *Astronomische Nachrichten*. This ephemeris takes the time of perihelion passage as June 3.64, and is given below:—

		Ephemeris 12h. (M.T. Berlin).			
1903		α	δ	$\log r$	$\log \Delta$
		h. m. s.			
Nov.	15	9 42 59	+1 45' 0	0.3565	0.3288
"	19	9 46 23	+1 11' 5		
"	23	9 49 25	+0 39' 5	0.3655	0.3180
"	27	9 52 3	+0 9' 3		
Dec.	1	9 54 16	-0 19' 0	0.3743	0.3067
"	5	9 56 5	-0 45' 1		
"	9	9 57 29	-1 8' 8	0.3830	0.2952
"	13	9 58 26	-1 30' 1		
"	17	9 58 57	-1 48' 7	0.3916	0.2840
"	21	9 59 1	-2 4' 3		
"	25	9 58 38	-2 16' 9	0.4000	0.2736

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THE SECULAR VARIATION OF STARLIGHT.—In a research on the secular variation of starlight, that is, the minute yet regular variations in magnitudes which take centuries to become evident, Mr. J. E. Gore has compared the present magnitudes of a number of stars with their respective magnitudes as recorded by Al-Sufi and Ptolemy. Recognising the important bearing of these variations on the theory of stellar evolution, he selected a number of stars having spectra of the first and second types for the comparison, and has published the details of his research in the November number of the *Observatory*, giving in each case the type of spectrum, the recently estimated magnitude, and the magnitude as recorded by Al-Sufi and Ptolemy, together with remarks on the validity of the latter. Mr. Gore has prepared two lists, one of which contains the data concerning 26 stars which are apparently decreasing in magnitude; the other deals with 20 stars which show an apparent increase. He points out in his remarks that in many cases the stars which are decreasing in magnitude have spectra of Pickering's "A" type, which, according to Sir Norman Lockyer's classification, would place them amongst those which are decreasing in temperature, and therefore, presumably, in magnitude; a well-known example of this agreement occurs in the case of β Leonis, which, according to Sir Norman Lockyer, must be placed on the descending side of his temperature curve, and, according to Mr. Gore's result, has decreased in magnitude from 1.0 in Al-Sufi's time to 2.2 at the present day.

SOLAR OBSERVATIONS AT LYONS OBSERVATORY DURING 1902.—In his annual report for 1902, M. J. Guillaume, director of the Lyons Observatory, states that the solar surface was observed on 236 days during the year, and was reported as being free from spots on 161 days. Thirty-three groups of spots were observed, their mean latitude being $21^\circ.0$, an increase of $5^\circ.3$ over last year's value. According to the Lyons observations the last sun-spot minimum took place at the end of 1901.

The observations of faculae show an increase in the number of groups, and the area covered by them, over the two preceding years; they also indicate that the mean latitudes of spots and faculae do not show a parallel variation, and from this, and the differences exhibited in their persistence and activity, M. Guillaume arrives at the conclusion that it is really the faculae which indicate the regions of principal activity, the spots being only of secondary importance in this matter. This conclusion is supported by the various tables which accompany the report in the November issue of the *Bulletin de la Société de France*.

METEOROLOGICAL OBSERVATIONS WITH KITES AT SEA.

THE following extracts from a communication to our contemporary *Science* by Mr. A. L. Rotch indicate the rapid progress which is being made in the exploration of the upper air by means of kites from ships, and a scheme for further investigation.

The first to repeat the pioneer experiments of the late Mr. Sweetland and the writer during their voyage across the North Atlantic in 1901 were Messrs. Berson and Elias, of the Prussian Meteorological Institute, who, last August, made a voyage from Germany to Spitzbergen and back, achieving satisfactory results with their kites. Meanwhile Prof. Köppen, of the Deutsche Seewarte, carried out analogous experiments on the Baltic Sea. About the same time, Mr. Dines, aided by grants from the Royal Meteorological Society and the British Association, employed a small steamer for kite-flying off the west coast of Scotland, in connection with a fixed station on land.

Meteorological kites have recently been flown from steamboats on Lake Constance by Count von Zeppelin and Prof. Hergesell on some of the term-days of the international balloon ascensions. Similar experiments upon the smaller lakes of Prussia and Russia have also shown that kites may be rendered nearly independent of the wind even in the interior of the continents.